ABSTRACT OF THE DISCLOSURE

A technique for optically converting wavelengths in a multi-wavelength system is disclosed. In one embodiment, wherein the multi-wavelength system has W

5 wavelength channels, wherein $W = 2^N$, the technique is realized by selectively directing a received frequency channel corresponding to a respective wavelength channel based upon a predetermined frequency mapping. Then, the frequency of the selectively directed frequency channel

10 is shifted at least once by an amount defined by $\pm 2^i \Delta f$, wherein Δf is the frequency spacing between adjacent frequency channels, and $i = 0, 1, \ldots N-1$.